REMARKS

The Office Action dated May 3, 2004 has been received and carefully noted. The following remarks are submitted as a full and complete response thereto.

Claims 2 and 5 having previously been cancelled, claims 1, 3-4, and 6-13 are pending in the present application. Claims 1 and 7 are independent claims and have been amended. However, claims 1 and 7 have been amended exclusively for the purpose of clarity and have not been amended in view of any prior art. No new matter has been added. Claims 1, 3-4, and 6-13 are respectfully submitted for consideration.

Claims 1, 3-4, 6-11, and 13 Rejected Under 35 U.S.C. § 103(a):

Claims 1, 3-4, 6-11, and 13 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,912,880 to Bernstein (Bernstein '880) in view of U.S. Patent Application No. U.S. 2002/0034163 A1 to Hamamoto et al. (Hamamoto '163). In the Office Action, it was acknowledged that Bernstein '880 fails to disclose that the number of samples is set such that time-dependent cell delay variation of actual signals being asynchronously transmitted has a mean value of zero. However, it was alleged in the Office Action that Hamamoto '163 may be combined with Bernstein '880 to yield the claimed invention. This rejection is respectfully traversed.

Claim 1, upon which claims 3-4 and 6 depend, recites a clock generating method for an asynchronous transmission. The method includes determining a plurality of actual signal arrival times for a number of samples, averaging the plurality of actual signal arrival times over the number of samples, and correcting a timing of a receiving clock on a basis of an average of the plurality of actual signal arrival times and an expected signal arrival time. The method also includes deriving an expected signal arrival time from the receiving clock and determining a

frequency difference between a frequency corresponding to an average of the plurality of actual signal arrival times and a frequency of the receiving clock, and changing the frequency of the receiving clock according to the frequency difference. The number of samples is set such that a time-dependent cell delay variation of actual signals being asynchronously transmitted has a mean value of zero.

Claim 7, upon which claims 8-13 depend, recites a clock generating apparatus for asynchronous transmission. The apparatus includes means for determining an average of actual signal arrival times over a number of samples and for generating a control signal on a basis of a determined average of the actual signal arrival times and an expected signal arrival time. The apparatus also includes means for correcting a timing of a receiving clock on a basis of the control signal. The number of samples is set such that a time-dependent cell delay variation of actual signals being asynchronously transmitted has a mean value of zero.

As discussed in the present specification, certain embodiments of the claimed invention provide a clock generating method and apparatus for an asynchronous transmission, by means of which clock synchronization between a transmitter and a receiver can be maintained. Bernstein '880 and Hamamoto '163, whether viewed individually or in combination, fail to disclose or suggest the elements of any of the presently pending claims. Therefore, Bernstein '880 and Hamamoto '163 fail to provide at least the above-mentioned advantages of the claimed invention.

Bernstein '880 discloses a system and method for ATM constant bit rate (CBR) timing recovery. More specifically, Bernstein '880 discloses services that use CBR streams carried over a packet switched network. Bernstein '880 also discloses a technique for recovering timing from a CBR stream. In addition, Bernstein '880 discloses correcting the receiver's clock according to

an average cell interarrival time which may be derived from the time required to receive a predetermined number of cells.

However, Bernstein '880 fails to disclose or suggest at least that "the number of samples is set such that a time-dependent cell delay variation of actual signals being asynchronously transmitted has a mean value of zero", as recited in claims 1, 3-4, and 6-13 of the present application.

Hamamoto '163 discloses a regulation method and apparatus for ATM cell delay variation. Hamamoto '163 also discloses discriminating a communication type and calculating a variation waiting time based on the discrimination. In addition, Hamamoto '163 discloses a dummy cell inserting circuit for inserting the last reaching cell as a dummy cell if a cell delay time cannot be regulated by the variation waiting time.

However, Hamamoto '163, like Bernstein '880, fails to disclose or suggest at least that "the number of samples is set such that a time-dependent cell delay variation of actual signals being asynchronously transmitted has a mean value of zero", as recited in claims 1, 3-4, and 6-13 of the present application.

On page 3 of the Office Action, it is alleged that Hamamoto '163 discloses, in Figure 9 thereof, a graph showing the distribution of the cell delay time, wherein the distribution of the cell delay time follows the Poisson distribution with a mean value of zero. However, Applicants respectfully disagree at least for the reasons discussed below.

As is known to one of skill in the art, the probability density function of the Poisson distribution is as follows:

$$P(X = k) = e^{-\lambda}\lambda^{k}/k!, \quad k = 0, 1, 2, 3, \ldots .$$

Since one of skill in the art understands that the Poisson distribution is derived as a limit of binomials, all with mean λ, one of skill in the art also appreciates that λ is the mean of the Poisson distribution as well. Further, one of skill in the art appreciates that the variance of the Poisson distribution is numerically equal to λ.

Therefore, it is understood by one of skill in the art that the mean value λ is the product of $n \cdot p$, where n represents the number of tests, which is a relatively large number, and where p represents the probability of a certain event happening, which is very low. Thus, if the mean value λ were zero, as alleged in the Office Action, the probability distribution of the Poisson distribution, as calculated by the above formula, would also be zero. However, Applicants respectfully submit that, although the mean value λ may be rather low, Hamamoto '163 fails to disclose or suggest that the mean value of the Poisson distribution is zero. Therefore, contrary to the allegation made on page 3 of the Office Action, Hamamoto '163 fails to disclose or suggest at least the "mean value of zero" recited in claims 1, 3-4, and 6-13 of the present application.

At least in view of the above, Bernstein '880 and Hamamoto '163, taken either individually or in combination, fail to disclose or suggest the subject matter recited in claims 1, 3-4, 6-11, and 13 of the present application. Therefore, Applicants respectfully submit that claims 1, 3-4, 6-11 and 13 are patentable over Bernstein '880 and Hamamoto '163, taken either individually or in combination. Applicants also respectfully request reconsideration and withdrawal of the rejection of claims 1, 3-4, 6-11 and 13 under 35 U.S.C. § 103(a) as being unpatentable over Bernstein '880 in view of Hamamoto '163.

Rejection of Claim 12 under 35 U.S.C. § 103(a):

Claim 12 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Bernstein '880 and Hamamoto '163 in view of U.S. Patent No. 5,834,980 to Pitio et al. (Pitio '980). In the

Office Action, it is acknowledged that Bernstein '880 and Hamamoto '163 each fail to disclose a phase detector, wherein a polarity of the control signal is changed in accordance with a result of comparison. However, it is alleged in the Office Action that Pitio '980 may be combined with Bernstein '880 and Hamamoto' 163 to yield the claimed invention. This rejection is respectfully traversed.

As discussed above, Bernstein '880 and Hamamoto '163 each fail to disclose or suggest at least that "the number of samples is set such that a time-dependent cell delay variation of actual signals being asynchronously transmitted has a mean value of zero", as recited in claim 12 of the present application.

Pitio '980 discloses "a synchronization signal for the purpose of sampling an input data signal" (column 1, line 61-62). Pitio '980 also discloses using "a plurality of oscillatory signals, each of which is adjusted to a reference periodic signal" (column 1, line 65-66). However, Pitio '980 fails to address or eliminate any of the shortcomings of Bernstein '880 and Hamamoto '163. Therefore, Bernstein '880, Hamamoto '163, and Pitio '980 each fail to disclose or suggest the subject matter recited in claim 12 of the present application.

At least in view of the above remarks, reconsideration and withdrawal of the rejection of claim 12 under 35 U.S.C. § 103(a) as being unpatentable over Bernstein '880 and Hamamoto '163 in view of Pitio '980 is respectfully requested.

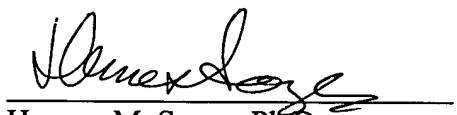
Applicants respectfully submit that all of the comments included in the Office Action have been addressed and that all of the rejections included in the Office Action have been overcome. Applicants respectfully further submit that, at least in view of the above, claims 1, 3-4, and 6-13 of the present application contain allowable subject matter.

Therefore, it is respectfully requested that all claims pending in the present application be allowed, and that this application be passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the Applicants' undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



Hermes M. Soyez, Ph.D.
Registration No. 45,852

Customer No. 32294
SQUIRE, SANDERS & DEMPSEY LLP
14TH Floor
8000 Towers Crescent Drive
Tysons Corner, Virginia 22182-2700
Telephone: 703-720-7800
Fax: 703-720-7802

HMS:mm